



CASE REPORT

Unexpected leukoagglutination in a 55-year-old woman

Giambattista Lobreglio MD ^{1*} | Maria Aguglia, MD ²

¹Clinical Pathology Unit, Vito Fazzi General Hospital, Lecce, Italy

²Clinical Pathology Unit, Vito Fazzi General Hospital, Lecce, Italy

Abstract

We describe an unexpected leukoagglutination observed on a blood smear obtained from a 55-year-old woman suffering from liver cirrhosis whose CBC showed signs of hemoagglutination but no flags on leukocyte count.

Keywords: Leukoagglutination, blood smear, granulocytes.

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1 | INTRODUCTION

In the Hematology department of our Clinical Pathology Laboratory, blood counts are routinely performed on patients admitted to our hospital and on outsiders who come to our blood collection point. The test is performed on samples collected in tubes containing dipotassium ethylene diaminetetraacetate (K2EDTA) with vacutainer sys-tem.

The test is performed on a Sysmex XN analyzer that provides, unless otherwise programmed, the Complete Blood Cell Count (CBC) with Leukocyte Formula (DIFF).

We received a sample from a patient admitted to the General Medicine Unit who showed signs of hemoagglutination: low RBC (Red Blood Cell) and HCT (Hematocrit) counts in relation to a slightly lower than normal hemoglobin value and high Mean Hemoglobin Content (MCH) and Mean Hemoglobin Concentration (MCHC) values, while no flag for leukocytes were reported by the cell counter. We

proceed, therefore, to the execution of the smear, to verify the presence of hemagglutinates and we put the sample in thermostat at 37°C for 1 hour to verify the possible presence of cryoagglutinins.

Microscopic examination of the smear showed the presence of small and numerous erythrocyte agglutinates, but, unexpectedly, it also showed the presence of numerous leukocyte aggregates, mainly composed of Neutrophil Granulocytes, but sometimes also of Monocytes (Fig. 1).

The aggregates were composed of a variable number of cells, from 2 to 8-10 or even more, and could sometimes include eosinophilic granulocytes (Fig.

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Corresponding Author: Giambattista Lobreglio MD

Clinical Pathology Unit, Vito Fazzi General Hospital, Lecce, Italy

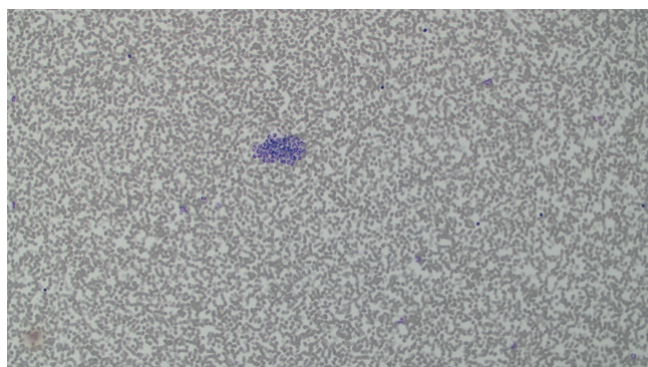


FIGURE 1: A May-Grunwald stained blood smear at a total magnification of x400 shows several red blood cells agglutination and a great aggregate of leukocytes.

2).

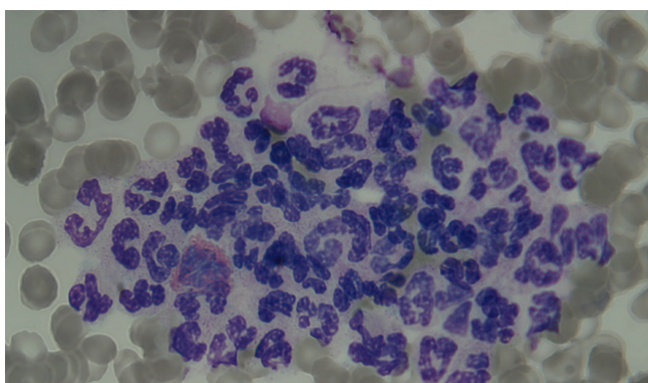


FIGURE 2: At a greater magnification of the smear (x1000) the leukocytes aggregate is composed prevalently by neutrophil granulocytes and few eosinophilic granulocytes.

The CBC examination is then repeated on the sample incubated at 37° for 1 hour and so is the smear.

The CBC examination is perfectly normalized by the heating of the sample and also the erythrocyte agglutinates and leukocyte aggregates are disappeared on microscopic examination of the smear performed after incubation at 37°C; no difference in leucocytes count between the test performed at room temperature and the blood warmed at 37° were reported.

Investigating the clinical conditions of the patient on whom the sample was taken, we learned that she was a 55-year-old woman suffering from alcohol-related liver cirrhosis, in an advanced stage of disease and candidate for liver transplantation.

2 | THE PATIENT HAD NO ONGOING INFECTIONS.

In the literature cases of agglutination of granulocytes related to infection with *Mycoplasma pneumoniae*, lymphomas, other infections (*Legionella*, Epstein Barr, Herpes Simplex, etc.) liver diseases or renal or intestinal carcinomas have been de-scribed (1), (2), (3). In these cases, erythrocyte agglutination is generally not associated and the phe-nomenon persists even after incubation of the sample at 37°C.

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